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- 1 1. OFDM telecommunication device (1) comprising an analog RF and/or IF stage and a digital stage to generate and/or process the baseband signal, characterized by a transformation unit (2) that incorporates at least an analog multiplication step and an at least analog convolution step of a multiplication comvolution multiplication algorithm or a convolution multiplication comvolution algorithm to perform a fourier transformation for demodulation and/or an inverse fourier transformation for modulation into the analog stage.
- 2. OFDM telecommunication device according to claim 1, **characterized by**10 an IQ processing unit that incorporates a multiplication step of said multiplication convolution multiplication algorithm.
 - 3. OFDM telecommunication device (1) according to claim $1 \cdot er \cdot 2$, characterized in that said transformation unit (2) comprises

an analog multiplier (6; 22) to perform a frequency conversation of a signal input thereto by the multiplication of said input signal with a chirp signal, and

an analog delay means having different delay properties to perform said convolution.

- 4. OFDM telecommunication device (1) according anyone of the preceding elaims, characterized in that said transformation unit (2) comprises a surface acoustic wave device or a CCD to perform said convolution.
- 25 5. OFDM telecommunication device according to anyone of the preceding elaims, characterized in that it is a part of a high data rate system.
- 6. OFDM telecommunication device (1) according to anyone of the preceding claims, characterized in that said transformation unit (2) is placed in the lowest IF stage.
- 7. OFDM telecommunication device (1) according to anyone of the preceding to laims, characterized in that said transformation unit (2) performs a RF to IF down-conversion and/or an IF to RF up-conversion.

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8. OFDM telecommunication device (1) according to anyone of the preceding t

an analog first multiplier (6) that multiplies the received OFDM RF-signal with a chirp signal, and

an analog delay means (7) with different delay properties receiving and convoluting the IF output signal of said analog first multiplier (6).

- 9. OFDM telecommunication device (1) according to claim 8, characterized by a second multiplier (8) to multiply the convoluted IF-signal with said chirp signal that is not phase shifted to output a real baseband signal, and a third multiplier (9) to multiply the convoluted IF-signal with said chirp signal that is phase shifted by 90 degrees to output an imaginary baseband signal.
- 15 10. OFDM telecommunication device (1) according to claim 8, characterized by a digital processing unit (19) receiving the convoluted IF-signal via an analog to digital converter (17) to output a real baseband signal and an imaginary baseband signal.
- 11. OFDM telecommunication device (1) according to claim 8, characterized by a CORDIC calculation unit (20) receiving the convoluted IF-signal via an analog to digital converter (17) and an IQ demodulator (21) to output a real baseband signal and an imaginary baseband signal.
- 25 12. OFDM telecommunication device (1) according to anyone of elaims 8 to 11, characterized in that said analog transformation unit (2) performs time and frequency synchronization of the OFDM telecommunication device (1) on basis of at least one received control signal by performing a controlled generation of said chirp signal for the analog first multiplier (6).
 - OFDM telecommunication device (1) according to anyone of the preceding claims 1-to 7, characterized in that it is a transmitter of OFDM modulated signals and the transformation unit (2b) comprises
 - an analog delay means (7) with different delay properties receiving and convoluting an IF signal that results from the baseband signal that is to be transmitted.

and an analog fourth multiplier (22) that multiplies the convoluted IF-

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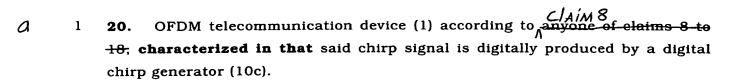
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- l signal output by the analog delay means (7) with a chirp signal to output a OFDM signal.
 - 14. OFDM telecommunication device (1) according to claim 13, characterized by a fifth multiplier (23) to multiply the real part of a baseband signal with said chirp signal that is not phase shifted, a sixth multiplier (24) to multiply the imaginary part of the baseband signal with said chirp signal that is phase shifted by 90 degrees and an adder (25) receiving the output signals of the fifth and sixth multipliers (23, 24) to add them and to output said IF signal to said transformation unit (2b).
 - 15. OFDM telecommunication device (1) according to claim 13, characterized by a digital processing unit (34) receiving the real part of the baseband signal and the imaginary part of the baseband signal to output said IF signal via a digital to analog converter (30) to said transformation unit (2b).
 - 16. OFDM telecommunication device (1) according to claim 13, characterized by a CORDIC calculation unit receiving the real part of the baseband signal and the imaginary part of the baseband signal to output said IF signal via an IQ modulator and a digital to analog converter to said transformation unit (2b).
- 17. OFDM telecommunication device (1) according to anyone of claims 8 to 15, characterized in that said analog delay means (7) comprises an analog chirp filter.
 - 18. OFDM telecommunication device (1) according to anyone of the preceding claims, characterized in that it is a transceiver for OFDM modulated signals and the analog transformation unit (2) comprises features as defined in anyone of claims 7 to 11 and 16 for the receiver side in combination with the features as defined in anyone of claims 12 to 15 and 16 for the transmitter side.
- 19. OFDM telecommunication device (1) according to anyone of claims 8 to 18, characterized in that said chirp signal is analogy produced as impulse response of a chirp filter included in an analog chirp generator (10a, 10b).



5 21. OFDM telecommunication device (1) according to anyone of the preceding to that it is used in a BRAN system.

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